Considerations for the Deployment of Biometric Authentication in Enterprise Network Environments

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How do you remember passwords?

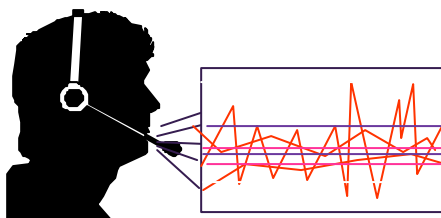"Sorry about the odor. I have all my passwords tattooed between my toes."

Why would a large enterprise consider biometric authentication in place of passwords?

- **Enhanced security**
- **User convenience**
- **Save the cost of managing passwords**
  - **$200+ per year per employee**

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A wide range of biometrics are now available

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Are large enterprises ready for biometrics?

At first glance it would seem so…
- **It's affordable - costs have fallen dramatically**
- **There are many choices of proven technologies**
- **It works well for the vast majority of users**
- **There is a good value proposition for biometric authentication replacing vulnerable passwords**
- **There is a heightened sense of urgency to strengthen infrastructure security**

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So what has been holding the market back?

- **Budget constraints?**
- **Technology maturity issues?**
- **Privacy concerns?**
- **Mark of the beast?**

…..Probably none of the above!

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The big challenge is the integration

- **Biometrics has to become a fully integrated component within an complex enterprise network environment**
- **There are very few solutions that meet this challenge today**

  Biometric technology is not the issue
  – it's the integrated solution

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What does the network user want?

- **Doesn't want to spend more time than is currently required logging in**
  - **Less time would be great**
- **Doesn't want to be locked out of the computer under any circumstances**
- **Doesn't want to alter work patterns and habits to accommodate new technology**
- **Wants consistent login experience whether connected to the network or not**
- **Wants to forget their password!**

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What does the administrator want?

- **Prime directive: Protect the network!**
  - **The solution must enhance network security**
- **Seamless integration with familiar administrative tools and procedures**
- **Flexible enrollment options**
- **Audit control and accountability**
- **Choice of biometric technologies**
- **A packaged solution that installs into the existing environment**
  - **No costly custom development and integration**
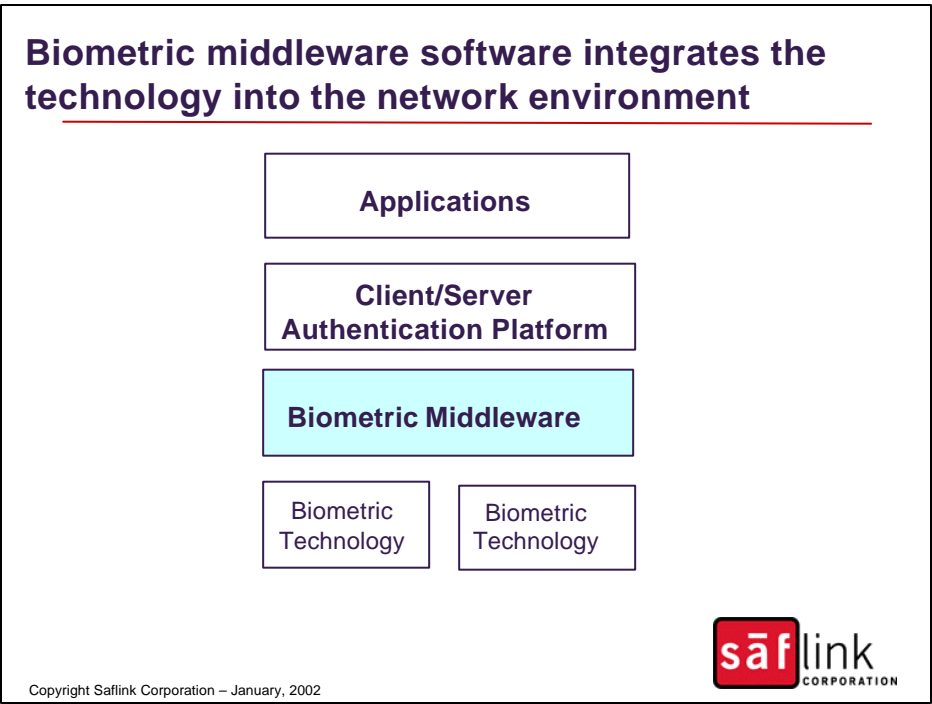
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That leads to several design goals

A packaged solution that is:
- **Secure**
- **Scalable and fast**
- **Reliable**
- **More convenient and easier to use than alternatives**
- **Simple to deploy, administer and upgrade**
- **Leverages existing client/server infrastructure**
- **Biometric technology neutral**
- **Standards compliant**

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Biometric middleware software integrates the technology into the network environment

Applications

Client/Server Authentication Platform

Biometric Middleware

Biometric Technology	Biometric Technology

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What key features should be present in a biometric middleware solution for the large enterprise?

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Choice of biometric technologies

- **Ability to "plug" in software modules that provide connectivity to a range of devices**
  - **Fingerprint**
  - **Face recognition**
  - **Speaker verification**
  - **Iris recognition**
- **Enabled through standard APIs like BioAPI**

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Flexible enrollment and installation options

- **Administrator assisted enrollment**
  - **For individuals and groups**
- **User self-enrollment**
  - **Enroll at your own pace**
  - **Practice wizard**
- **Options can be set by administrator policy**
- **Support for silent installation via automated tools**

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Support for Disconnected Login

- **For mobile users that are not always connected to the network**
  - **Provides the same user login experience whether connected or not**
  - **Requires encrypted cached credentials on the local machine that are refreshed when connected**
- **VPN and dial-up connection for mobile users**

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Comprehensive policy management and auditing

- **Extend existing administrative tools to support biometric policies**
  - **Windows NT User Manager for Domains**
  - **Windows 2000 MMC**
  - **Novell Console One**
  - **Computer Associates eTrust Admin**
- **Support multi-factor authentication via smart cards, RF badges and tokens**
- **System logging and auditing through extensions to existing auditing infrastructure**

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Scalability and redundancy features

- **Leverage scalability features of enterprise directory services**
  - **Extend user object to include biometric secrets**
  - **Support for roaming users and profiles**
- **Server components should include replication and load balancing features**
- **Provide option for server-side matching or distributed client-side matching**
  - **by user or group policy**

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Counter-measures against security attacks

- **Component module signing**
- **Encryption of all biometric secrets**
- **Debugger hostile**

Design goal is to make biometric solution components the least likely point of attack

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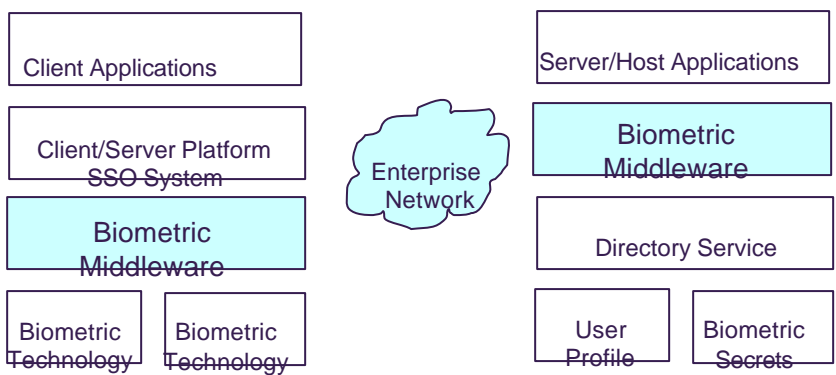**CORPORATION**

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Integrates with single sign-on systems

- **SSO provides login to multiple applications**
- **Biometrics provides strong authentication for the primary login function**
- **Biometrics and SSO is a strong combination for enterprises with complex environments**

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Effective integration is the key to deployment of biometrics in large enterprises

Client Applications

Client/Server Platform
SSO System

Biometric
Middleware

Biometric
Technology

Biometric
Technology

Enterprise
Network

Server/Host Applications

Biometric
Middleware

Directory Service

User
Profile

Biometric
Secrets

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